

**REMARKS**

Claims 12-15 are pending.

The Office Action rejects claims 12-15 under 35 U.S.C. §103(a) over JP 6-143855 to *Hikoharu* in view of U.S. Patent Application Publication No. 2001/0039891 to *Takeuchi et al.* and rejects claim 15 under 35 U.S.C. §103(a) over *Hikoharu*.

These rejections are respectfully traversed.

Applicants' independent claim 12 is directed to a printing mask comprising a mask frame and a mesh extended on the mask frame. The printing mask includes a first resin layer that is formed inside the mesh. A second resin layer is formed directly on a surface of the first resin layer. The thickness of the second resin layer is 3 micrometers or less. A pattern forming portion, in which the second resin layer is not formed, is located in a region corresponding to an electrode pattern to be formed on a printing object. A mask portion, in which the first resin layer and the second resin layer are formed, is located in a region other than the region of the pattern forming portion. A peripheral portion, in which the first resin layer is formed but the second resin layer is not formed, is located within the pattern forming portion along a periphery of the pattern forming portion.

Such features encompass Applicants' exemplary embodiment as illustrated in Fig. 14 of Applicants' as-filed specification. As shown in Fig. 14, a printing mask is formed by filling resin into openings of a mesh except in a region that forms an electrode pattern in a pattern forming region 4. The mesh is extended on a mask frame 5. The regions of the mesh filled with the resin is called a mask portion 3. The mask portion 3 includes a filled part 3b which is a portion filled in the mesh and a raised part 3a. The raised part 3a is formed directly on a surface of the filled part

3b. The end of the filled part 3b formed inside the mesh is extended into the pattern forming portion 4 by a predetermined length from the end of the raised part 3a.

Thus, the peripheral portion is located within the pattern forming portion and along a periphery of the pattern forming portion 4. Fig. 15 of Applicants' as-filed specification shows an electrode pattern formed by using the printing mask of Fig. 14.

The Examiner recognizes that *Hikoharu* does not specifically teach a mask wherein the first emulsion layer is formed inside the mesh, nor does *Hikoharu* teach that the second emulsion layer is 3  $\mu\text{m}$  or less. Applicants respectfully disagree with the Examiner's assertion that *Takeuchi* overcomes these deficiencies of *Hikoharu*.

The Examiner asserts that the emulsion being within the mesh layer is inherent to gelatin photosensitive emulsion. Assuming, for the sake of argument only, that the Examiner's position is accurate, *Hikoharu* teaches a first emulsion layer 11 and a second emulsion layer 12. An opening portion 5 is formed in the screen 3. The layer 11 formed directly on the surface of the screen 3. The layer 11 formed directly on the surface of the screen 3 does not include a peripheral portion. Instead, the second emulsion layer 12 is set back from the first emulsion layer 11. See Fig. 1.

The Examiner alleges that *Takeuchi* teaches an emulsion layer formed inside the mesh. However, *Takeuchi* does not disclose a second resin layer, formed directly on the surface of a first resin layer formed inside the mesh, including the peripheral portion as claimed in Applicants' independent claim 12. The mere provision of an emulsion layer formed inside the mesh, as allegedly taught by *Takeuchi*, does not provide motivation to arrive at Applicants' independent claim 12's claimed combination of features. The combination would result in the screen layer 3

of *Hikoharu* having an emulsion layer (which the Examiner alleges is inherent) and the first emulsion layer 11 still would not include a peripheral portion because there is no teaching in either reference to form a peripheral portion in which the layer directly on the surface of the mesh layer, is not formed.

In addition the Examiner has provided no argument that the combination of *Hikoharu* and *Takeuchi* disclose a peripheral portion between the first resin layer and a second resin layer that is formed directly on the surface of the first resin layer formed inside the mesh. Thus, the Examiner has not provided reasoning sufficient to support an obviousness rejection, particularly taking into account the Patent Offices examination guidelines for determining obviousness under 35 U.S.C. §103(a) in view of KSR International Co. v. Teleflex Inc., 82 U.S.P.Q.2d 1385 (2007).

The guidelines state that the Examiner should clearly articulate why the claimed invention would have been obvious. For example, the Supreme Court in KSR held that the Examiner "must [provide] some articulated reasoning with some rationale underpinning to support the legal conclusion of obviousness" (KSR, 82 U.S.P.Q.2d 1385, 1396 (2007)). In this case, the Examiner has not provided any reasoning why the combination of *Hikoharu* and *Takeuchi* would provide a first resin layer formed inside a mesh and a second resin layer formed directly on the surface of the first resin layer and including the peripheral portion in which the first resin layer is formed but the second resin layer is not formed, as in Applicants' independent claim 12.

Applicants' independent claim 12 also recites that the second resin layer formed directly on a surface of the first resin layer has a thickness of 3  $\mu\text{m}$  or less. The Examiner recognizes that this feature is not disclosed in either *Hikoharu* or

*Takeuchi*. The Examiner also alleges that *Takeuchi* teaches that screen thickness, web thickness, emulsion thickness, etc. depends on the strength of the screen required, desired thickness of print and number of screen passes in addition to other considerations in paragraphs [0004]-[0011]. This assertion is respectfully traversed. Paragraphs [0004]-[0011] of *Takeuchi* make no mention of screen thickness. Instead, paragraph 8 relates to a width of an emulsion film. There is no disclosure in *Takeuchi* related to film thickness.

The Examiner's attention is drawn to Fig. 11 of Applicants' specification which compares breakage rates of a substrate when the front silver electrode pattern is formed between the conventional printing mask having an emulsion thickness  $t_2$  of 14  $\mu\text{m}$  at the raised part 3a and the mask portion 3 and the printing mask having the emulsion thickness  $t_2$  of 3  $\mu\text{m}$  as in Applicants' first embodiment. As shown in Fig. 11, the breakage rate was extremely small when the raised part 3a of the mask portion 3 has an emulsion thickness  $t_2$  of 3  $\mu\text{m}$ . This feature is not disclosed or suggested in either of the applied references. Neither of the references address the problems which are addressed by the features of Applicants' independent claim 12.

Thus, withdrawal of the rejection of independent claim 12 is respectfully requested.

The dependent claims are allowable for at least the reasons discussed above as well as the individual features they recite.

Early and favorable action with respect to this application is respectfully requested.

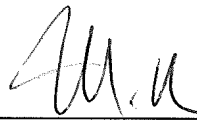
Should any questions arise in connection with this application or should the Examiner believe that a telephone conference with the undersigned would be helpful in resolving any remaining issues pertaining to this application the undersigned respectfully requests that he be contacted at the number indicated below.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: February 26, 2010

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